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SEARCHES REGARDING THE EFFECTS OF SOME HYDROALCOHOLIC EXTRACTS, FROM THE ASSOCIATION BETWEEN, MEDICINAL AND AROMATIC PLANTS, UPON THE BIOPRODUCTIVE PERFORMANCES AND STATE OF HEALTH AT BROILER HENS

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Abstract

The following study shows the results obtained after the administration of some associations between medicinal and aromatic plants,at broiler hens. One hundred and twenty broiler hens, from hibrid Ross-308 were taken under observation during the experiment and the experimental periode was from 1 to 42 days. The followed issues during the experiment were the evolution of the medium body weight gain, the daily live weight gain, tha daily feed intake and the feed conversion efficiency.

Key words: medicinal plants, aromatic plants, broiler hens, meat quality.

INTRODUCTION

In the UE starting from January the First, 2006, the antibiotics used as growth promoters, were taken out from the animals nutrition. That is why it is necessary the development of some alternative strategies for the improvement of the health and productivity at animals, without causing a significant growth on the production costs.

Most of the researches were axed on the idea of changing the antibiotics with other growth promoters. In order to keep the level of animal production the present documentation took in regard series of substances, some of them new, and even already known ones. Researches showed that pre- and probiotics, simbiotics, organic acids, different enzymatic preparates, and also diffrent extracts (aqueous, hydroalcoholic, oils, essential oils) from medicinal and aromatic plants, wich are called phytoadditives, can be considered potential promoters (Tossenberger, Babinszky and Kovács, 2002).

Although all this substances are beeing already used in human medicine, our knowledge about them is, not enough, yet. The mechanism of reaction for the active substances and plants are undiscovered, and needer their effect upon animal organism are enough clearly specified. Most of the substances from plant extracts presents multifunctional effects. The literature of speciality reminds more often antioxidant, apetisant, imunostimulant, bacteriostatic properties (Erdélyi, 2004).

The objective of the current study was to determine the effects of association between artichoke and thyme, rosemary and sea buckthorn upon the bioproductive performances at the broiler hens.

MATERIAL AND METHODS

In the following experiment there had been used 120 broiler hens, which were taken under observation at the age of one day, belonging to hybrid Ross-308 and they were divided into four experimental group, 30 birds/group. All the four trial took advantage of the some type of nutrition, but at trials L2, L3, L4 were administrated in the drinking water also a phytoadditives association, so: L2 (hydroalcoholic extract of Thyme 0.5 % (EHCi) + hydroalcoholic extract of Artichoke 0.5 % (EHA) = EHCiA, summing a concentration of 1 % in the drinking water, L3 (hydroalcoholic extract of Rosemary 0.5 % (EHR) + hydroalcoholic extract of Artichoke 0.5 % (EHA) = EHRA, summing a concentration of 1 % in the drinking water, L4 hydroalcoholic extract of Sea buckthorn 0.5 % (EHC) + hydroalcoholic extract of Artichoke 0.5 % (EHA) = EHCA, summing a concentration of 1 % in the drinking water.

The adopted technology was that of raising broiler hens at land. The housing was made in separate compartiments on trials, having a range of 12 broilers/m^2, but in the same cottage, taking advantage in this way by the same climat and growth technology.

The lightening methods were in this order: 23 hours of light and one hour of dark.

The experimental periode was 42 days, beeing divided, in three periode like wise: starter (14 days): 1- 14 days ; grower (21 days); 15- 35 days; finisher (7 days): 36 – 42 day.

During the experiment were used combined nutritions matching for each moment, periode of growth. N.C. starting with a PB of 21% and EM 2990 Kcal/Kg N.C., growth with a PB 19% and EM 3100 Kcal/Kg, N.C. final with a PB of 18% and EM 3150 Kcal/Kg.

RESULTS AND DISCUSSION

Evolution of body weight gain at the broiler hens for the all experimental groups

In the first table are beeing given the medium body weight gain in dinamic fase. At the age of one day, the medium body weight gain at broiler hens is closed at the four trials having values between 41.05 g in case of L2 and 41.27 g in case of L4. If in initially the medium body weight gain was practically equal at all the broiler hens from the trials, meantime this had a different evolution so that at the end of the first periode, were remarked the

broiler hens from the trial where it had been used EHCA extract (L4), but still with a close value to Control group.

At the end of the grower periode (at the age of 35 days) the medium body weight gain of broiler hens was of 1925,74 g/bird in case of L1 (Control group); 1997,00 g/bird in case of L2 (with EHCiA); 2013.34 g/bird in case of L3 (with EHRA) and 1912.65 g/broiler in case of L4 (with EHCA).

After the age of 5 weeks, the body weight gain at broiler hens continued to growe, reaching medium values of 2545.31 g/bird L1 (M); 2608.17 g/bird at L2; 2652.27 g/bird at L3 and also 2541.21 g/bird at L4. The body weight differences are in advantage for those broiler from L2 and L3, wich at the and of the experimental periode, had achieved a bigger body weight gain value from L1, with 106.96 g/bird in case of L3 (with EHRA) and with 62.86 g/bird in case of L2 (EHCiA). In case of L4 the body weight gain it has very close values to those from L1 (M).

Table 1.

Evolution of body weight gain and standard deviation ($\pm s_x$) of broiler hens during the experiment.

Specification	L1 Body weight gain $\pm s_x$	L2 Body weight gain $\pm s_x$	L3 Body weight gain $\pm s_x$	L4 Body weight gain $\pm s_x$
Initial	41.21 ± 0.20	41.05 ± 0.23	41.15 ± 0.21	41.27 ± 0.20
Fase I	370.45 ± 23.54	363.65 ± 27.11	366.53 ± 24.86	372.32 ± 22.21
Fase II	1925.74 ± 65.41	1997.00 ± 62.17	2013.34 ± 64.02	1912.65 ± 63.72
Fase III	2545.31 ± 79.23	2608.17 ± 75.20	2652.27 ± 76.47	2541.21 ± 72.00

*p<0,05; ** p< 0,01; *** p<0,001

The obtained results were analised also statistically with the add of some parametrical tests (test t and ANOVA) and some nonparametrical tests (Mann-Withney and Kruskal Wallis). Regarding the evolution of body weight gain, there weren't registered any representative diffrences from the statistical point of view compared to L1 (M).

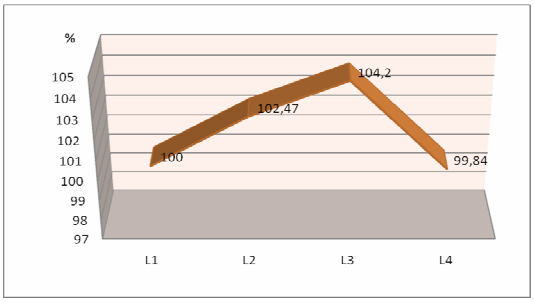

Fig. 1. Graphical representation of percentage values of body weight gain at broiler hens at the age of 42 days.

The procentual values of body weight gain at the end of the experiment compared to L1 presents the following order: L3 marges with 4.20 %, L2 with 2.47 % and L4 is less with 0.16 (Fig. 1.)

Analising the standard deviation in the case of each trial, at the end of the first experimental periode the values are closed, beeing between 22.21 g (L4) and 27.11 g (L2). At the end of the fifth week notice that those trials wich got phytoadditives as growth biostimulators presents a better uniformity than control group (L1(M)). At the end of the experiment compared L1 (M) (79.23 g) the best uniformity is present achieved by L4 (72.00 g), followed by L2 (75.20 g), than L3 (76.47 g).

The daily live weight gain

The daily live weight gain registered was similar in the first experimental periode for the four trials. Significant diffrences can be observed at the end of fase II, when L3 achieves a daily live weight gain bigger with 5.89 % than L1 (M). In the third periode of growth the biggest daily live weight gain is realesed also by L3, and summed for the all experimental trial, the values are closed and the order is the following: the best daily live weight gain is registered by L3, than L2, L1 and L4.The values are beeing showed in the table 2.

Table 2.

The daily live weight gain (g/bird/day) at the four trials.

Specification	L1	L2	L3	L4
Fase I	23.52	23.04	23.24	23.64
Fase II	74.06	77.78	78.42	73.35
Fase III	88.51	87.31	91.28	89.79
Whole cycle (1– 42 day)	59.62	61.12	62.17	59.52

The daily feed intake

Table 3.

The daily feed intake (g feed/bird/day) at the four experimental groups.

Specification	L1	L2	L3	L4
Fase I	40.45	38.94	38.81	40.53
Fase II	145.90	147.00	149.10	141.57
Fase III	186.76	172.21	177.18	166.23
Whole cycle (1– 42 day)	116.26	116.13	116.29	112.54

Regarding the daily feed intake at the four experimental trial, at the end of the experimental periode, the registered values were very close to each other, and they are between: 38.81 g/bird (L3) and 45.53 g/bird (L4). In the second periode the less daily feed intake was registered at L4 (141.57 g/bird). Summed for the whole experimental trial, L4 has accomplished the smaller daily feed intake 112.54 g/bird, and the other two trials (L2 with EHCiA and L3 with EHRA) had achieved a daily feed intake very close to L1 (M). The values are showed in table 3.

Feed conversion efficiency

The feed coversion efficiency values reached are beeing shown in table 4.

At the end of the experiment to lowest feed conversion efficiency was achieved by the broilers from L3 (with EHRA), followed by L4 (EHCA), than those from L2 (EHCiA) and at last L1 (M).

Table 4.

Feed conversion efficiency at the four trials.

Specification	L1	L2	L3	L4
Fase I	1.72	1.69	1.67	1.71
Fase II	1.97	1.89	1.90	1.93
Fase III	2.11	1.97	1.94	1.85
Whole cycle (1– 42 day)	1.95	1.90	1.87	1.89

Due to the values from fig. 2. in can be said that compared to L1 (Control group), L3 had achieved a feed conversion efficiency less with 4.1 %, L4 less with 3.8 % and L2 with 2.56 %.

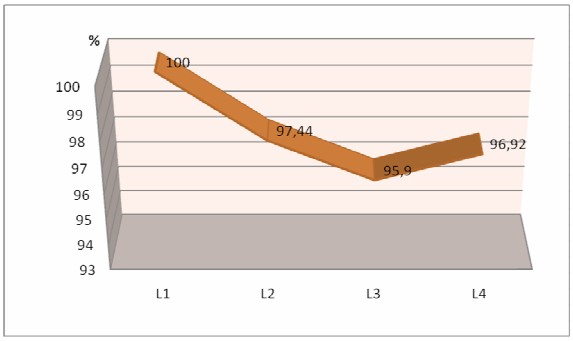

Fig. 2. Feed conversion efficiency at the four trials in percentage represent during the whole experimental period.

CONCLUSIONS

At the end of the experiment (at the age of 42 days), the body weight gain of broiler hens, reached medium values of 2545.31 g/bird at L1 (Control group), 2608.17 g/bird for trial L2, 2652.27 g/bird L3, also 2541.21 g/bird L4. The body weight gain differences are in advantage in this case of broiler hens from L3, those whom got hydroalcoholic extract of rosemary in association with hydroalcoholic extract of artichoke.

The daily live weight gain estimate for the whole experiment presents close values at the four trials, in the following order: the best daily live weight gain is registered by L3 (62.17 g/bird/day), followed by L2 than L1, and L4.

The lowest daily life feed intake estimated for the entire experimental cycle, was registered at trial L4 having a value of 112.54g/feed/bird/day.The other two trials had achieved similar values to those of trial L1(control).

The feed conversion efficiency at the end of each growth periode, also estimated for the whole experimental cycle was the lowest at those wich got as additives plant extracts, compared to L1, fact that help us to conclude that the used phytoadditives in the present experiment determined by their coplex action a better usage of the nutritional feed.

Based on the positive results, we highly recommend the use of these medicinal and aromatic plant extracts in the growth tehnology of broiler hens as growth promoters.

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